

Listing of Claims

What is claimed is:

1-47 (Canceled)

48. (New) A data transport interface, comprising:
a transceiving unit, configured to receive and transmit data which accords with a USB (Universal Serial Bus) specification;
a detecting unit, configured to detect the data received by the transceiving unit, to determine whether to convert the received data into data which accords with a particular specification; and
a conversion unit, configured to convert the received data into the data which accords with the particular specification when determining that the received data should be converted into the data which accords with the particular specification, and configured to convert the transmission data which accords with the particular specification into data which accords with the USB specification for transmission via the transceiving unit.

49. (New) The interface of claim 48, wherein the conversion unit comprises: an unpackaging unit, configured to unpackage the received data into the data which accords with the particular specification.

50. (New) The interface of claim 48, wherein the conversion unit comprises:
a packaging unit, configured to package the transmission data into the data which accords with the USB specification.

51. (New) The interface of claim 49, wherein the conversion unit comprises:
a packaging unit, configured to package the transmission data into the data that accord with the USB specification.

52. (New) The interface of claim 51, wherein the particular specification is a MPEG specification.

53. (New) The interface of claim 52, wherein the conversion unit further comprises:
a P/S conversion unit, configured to convert parallel synchronous transmission data which accords with the MPEG specification into serial asynchronous data which accords with the USB specification;

wherein the data which accords with the USB specification includes an integer multiple of packets which accord with the MPEG specification.

54. (New) The interface of claim 53, wherein the conversion unit further comprises:
a S/P conversion unit, configured to convert the received serial asynchronous data which accords with the USB specification into parallel synchronous data which accords with the MPEG specification.

55. (New) The interface of claim 54, wherein any one of the data which accords with the USB specification and the data which accords with the MPEG specification comprises at least one of service data and control information, the control information being used to control operations of a device equipped with the interface.

56. (New) The interface of claim 55, wherein the service data comprises at least one of audio data and video data.

57. (New) The interface of claim 55, wherein the control information comprises at least one of information for implementing PnP (Plug and Play) function, information on resource allocation and information on the transmission rate to be used.

58. (New) The interface of claim 57, wherein the control information may be transmitted in a data transfer mode of at least one of bulk data transfer and interrupt data transfer in the USB specification.

59. (New) A digital signal processing apparatus, comprising:
an interface , which includes:
 a transceiving unit, configured to receive and transmit data that accords with USB (Universal Serial Bus) specification;
 a detecting unit, configured to detect the data received by the transceiving unit, so as to determine whether to convert the received data into data which accords with a particular specification; and
 a conversion unit, configured to convert the received data into the data which accords with the particular specification when determining that the received data should be converted into the data which accords with the particular specification, and to convert the transmission data which accords with the particular specification into data which accords with the USB specification for transmission via the transceiving unit;
 wherein the particular specification is a MPEG specification;
 a processing unit, configured to perform at least one of playing, decrypting and storing the signals received via the interface.
60. (New) The digital signal processing apparatus of claim 59, further comprising:
 a RF (Radio Frequency) processing unit, configured to demodulate the RF signals received by the digital signal processing apparatus, to transmit the demodulated signals via the interface.
61. (New) The digital signal processing apparatus of claim 60, wherein the processing unit comprises:
 an audio decoding unit, configured to decode audio signals received via the interface;
 a video decoding unit, configured to decode video signals received via the interface;
 a playback unit, configured to play the decoded audio/video signals.
62. (New) The digital signal processing apparatus of claim 61, further comprising:
 a control unit, configured to extract a control command from the signals received via the interface;
 wherein the playback unit plays the decoded audio/video signals according to the control command.

63. (New) The digital signal processing apparatus of claim 62, wherein the RF (Radio Frequency) processing unit is further configured to transmit the control command.

64. (New) The digital signal processing apparatus of claim 63, wherein the control command further comprises EPG (Electronic Program Guide) information.

65. (New) The digital signal processing apparatus of claim 64, further comprising:
a graphics display unit, configured to display the EPG information according to the control command.

66. (New) The digital signal processing apparatus of claim 61, further comprising:
a software update unit, configured to store the software data received via the interface and to update the software.

67. (New) The digital signal processing apparatus of claim 61, further comprising:
a channel and tuner control information generation unit, configured to generate channel and tuner control information to choose a corresponding RF channel according to user requirement;
the channel and tuner control information is transmitted via the interface.

68. (New) The digital signal processing apparatus of claim 59, further comprising:
an audio decoding unit, configured to decode the audio signals received via the interface, and to provide the decoded audio signals to the playback unit for playing;
a video decoding unit, configured to decode the video signals received via the interface, and to provide the decoded video signals to the playback unit for playing.
a playback unit, configured to play the decoded audio/video signals received via the interface.

69. (New) The digital signal processing apparatus of claim 68, further comprising:
a control unit, configured to extract a control command from the signals received via the interface;
wherein the playback unit plays the decoded audio/video signals according to the control command.

70. (New) The digital signal processing apparatus of claim 69, wherein the control command further comprises EPG (Electronic Program Guide) information.

71. (New) The digital signal processing apparatus of claim 59, wherein the processing unit comprises:

- an acquisition unit, configured to acquire a user key;
- a filtering unit, configured to filter the signals received via the interface, to obtain authorization information for a user;
- a decryption unit, configured to perform decryption on the authorization information according to the user key, to obtain a de-scrambling key; and
- a de-scrambling unit, configured to de-scramble the signals received via the interface according to the de-scrambling key.

72. (New) The digital signal processing apparatus of claim 71, wherein the de-scrambling unit sends the de-scrambled signals via the interface.

73. (New) The digital signal processing apparatus of claim 71, further comprising:
a communication interface module, configured to receive and transmit data which accords with a particular transport protocol.

74. (New) The digital signal processing apparatus of claim 73, wherein the particular transport protocol comprises at least one of Ethernet transport protocol, Cable Modem transport protocol, SmartCard transport protocol and wireless protocol.

75. (New) The digital signal processing apparatus of claim 73, wherein the de-scrambled signals are transmitted via the communication interface module.

76. (New) The digital signal processing apparatus of claim 72, further comprising:
a control unit, configured to generate control information according to a user requirement;
wherein the control information may be transmitted via the interface.

77. (New) The digital signal processing apparatus of claim 72, further comprising:
a RF (Radio Frequency) processing unit, configured to demodulate the RF signals received by the digital signal processing apparatus, to transmit the demodulated signals via the interface.

78. (New) The digital signal processing apparatus of claim 77, further comprising:
a control unit, configured to generate control information according to a user requirement;
wherein the RF processing unit is further configured to transmit the control information.

79. (New) The digital signal processing apparatus of claim 59, further comprising:
a storage unit, configured to store signals received via at least one of the interface and the communication interface module.

80. (New) The digital signal processing apparatus of claim 59, further comprising:
an EPG (Electronic Program Guide) information extracting and parsing unit, configured to extract and parse EPG information from the signals received via the interface;
wherein the interface transmits the parsed EPG information.

81. (New) The digital signal processing apparatus of claim 59, further comprising:
a software downloading unit, configured to extract software data from the signals received via the interface.

82. (New) The digital signal processing apparatus of claim 81, further comprising:
a software updating unit, configured to update the current software by using the extracted software data.

83. (New) The digital signal processing apparatus of claim 81, wherein the software data is transmitted via the interface.

84. (New) The digital signal processing apparatus of claim 62, further comprising:
a tuner control unit, configured to control the RF processing unit according to the control information received via the interface, to receive signals on a corresponding channel.

85. (New) The digital signal processing apparatus of claim 78, further comprising:
a tuner control unit, configured to control the RF processing unit according to the control information received via the interface, to receive signals on a corresponding channel.

86. (New) A data transfer method, comprising steps of:
receiving data which accords with a USB (Universal Serial Bus) specification;
detecting the received data to determine whether to convert the received data into
processing data which accords with a particular specification; and
converting the received data into the processing data which accords with the particular
specification after determining that the received data should be converted into the processing
data which accords with the particular specification.

87. (New) The data transfer method of claim 86, further comprising steps of:
converting the transmission data which accords with the particular specification into
converted data which accords with the USB specification; and
transmitting the converted data which accords with the USB specification.

88. (New) The data transfer method of claim 87, wherein the converting the transmission
data step further comprises the step of:
packaging the transmission data into the converted data which accords with the USB
specification.

89. (New) The data transfer method of claim 86 wherein the particular specification is a
MPEG specification.